Amendment to the Drawings

The attached sheets of drawings include changes to Figs. 1, 7a, 13, and 16 and replace the original sheets of drawings including Figs. 1, 7a, 7b, 13, 16, and 17.

The amendments to Fig. 1 include a modification of a line previously extending between adjustable temperature compensation 14 and south bit line pulse generator 58 to instead extend between write protect 28 and south bit line pulse generator 58. Support for such an amendment may be found, for example, on page 31, lines 8-10 of the specification. Further amendments to Fig. 1 include the removal of reference numbers "32" within the blocks labeled "digit line current sinks" and the addition of reference numbers "32" within the blocks labeled "digit line current drivers." Support for the removal and addition of reference numbers 32 relative to such components of Fig. 1 may be found, for example, on page 18, lines 20-23 of the specification.

The amendment to Fig. 7a includes the connection of the segments of bit line 60 extending between the magnetic elements such that the line is shown as contiguous line. The amendment is proposed for consistency with the portion of the bit line shown extending across the top magnetic element.

Fig. 13 has been amended to move reference number "240" from the line extending from the bottom portion of magnetic element 220 to the line extending across magnetic element 220. Support for the amendment may be found, for example, on page 37, lines 17-26 of the specification.

As shown in Fig. 16, reference number "262" has been added to the line extending between current source 244 and conductive structure 250. In addition, conductive lines 260 and 262 have been modified to align with the conductive paths extending into or out of conductive structures 250 and vias 256. Support for the amendments may be found, for example, on page 41, lines 9-11 of the specification.

Attachment: Replacement Sheets for Figs. 1, 7a, 7b, 13, 16, 17.

REMARKS

Claims 1, 3, 4, 7, 10-13, and 16 have been amended, and claims 2, 5, and 6 have been canceled. As such, claims 1, 3, 4, and 7-27 are currently pending in the case. Further examination and reconsideration of the presently claimed application is respectfully requested.

Allowable Subject Matter

Claim 15 was objected to as being dependent upon a rejected base claim and was deemed allowable if rewritten in independent form. Applicant sincerely appreciates the Examiner's recognition of the patentable subject matter recited in the claim. However, as will be set forth below, independent claim 13, from which claim 15 depends, is believed to be patentably distinct from the cited art. Accordingly, removal of this objection is respectfully requested.

Section 102 Rejections

Claims 1-14 and 16-27 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent Application No. 2004/0114443 to Ezaki et al. (hereinafter referred to as "Ezaki"). Claims 2, 5, and 6 have been canceled rendering rejection thereto moot. A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. Of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987), MPEP 2131. Ezaki does not disclose all limitations of the currently pending claims, some distinctive limitations of which are set forth in more detail below.

Ezaki does not disclose a magnetic random access memory (MRAM) device with circuitry configured to independently vary amplitude, pulse width, or pulse delay of current applications along one or more conductive lines which are used to set magnetization states of magnetic elements within the array. Amended claim 1 recites:

> A magnetic random access memory device, comprising: an array of magnetic elements, a plurality of conductive lines configured to set magnetization states of the magnetic elements, and circuitry configured to independently vary aspects of current applications along one or more of the conductive lines, wherein the aspects comprise at least one of: an amount of current applied to the one or more conductive lines, a point in time at which current is applied to the one or more conductive lines, and a length of time current is applied to the one or more conductive lines.

Support for the amendments to claim 1 may be found on page 4, line 29 - page 5, line 1: "[i]n some cases, the circuitry may be configured to vary the point in time and/or length of time the current is applied to the one or more conductive lines. In addition or alternatively, the circuitry may be configured to vary the amount of current applied to the one or more conductive lines."

To support the anticipation rejection of claims 1-14 and 16-27, the Examiner cites passages from the background of Ezaki as well as the sections supporting Ezaki's teachings of an MRAM device having circuitry configured to control the magnitude of a write current at a constant value along a bit line. None of such passages or any other passages within Ezaki, however, teach or suggest circuitry which is configured to independently alter the amplitude, pulse width, or pulse delay of current applications along conductive lines used to set magnetization states of magnetic elements a MRAM array. Although Ezaki teaches adjusting magnitudes of incoming signals to generate a write pulse (see paragraph [0009] as cited in the Office Action), the times, durations, and amount at which write pulses are applied along the bit lines are predetermined and unvarying relative to each other. In particular, Ezaki teaches "[t]his pulse is adjusted to a predetermined pulse width responsive to the necessary current amount in the pulse width control section 217 to produce a write pulse." (paragraph [0009]). Accordingly, Ezaki fails to anticipate the limitations of claim 1.

Ezaki does not disclose an MRAM device having a storage circuit which includes one or more magnetic elements, is distinct from an MRAM array within the device, and is configured to store parameter settings characterizing applications of current to operate the MRAM array. Amended claim 13 recites:

> A device, comprising: a magnetic random access memory (MRAM) array and a first storage circuit distinct from the MRAM array and comprising one or more magnetic elements, wherein the first storage circuit is configured to store, within the magnetic elements, parameter settings characterizing applications of current to operate the magnetic random access memory array.

Support for the amendments to claim 13 may be found, for example, in Fig. 12 and corresponding text of the specification. Ezaki teaches the well-known configuration of MRAM magnetic elements to store a bit of information in either of two logic states in paragraphs [0041] and [0042] (cited in the Office Action as teaching the limitations of claim 13). Such information, however, does not correlate to parameter settings characterizing applications of current to operate the MRAM array. In addition, the MRAM magnetic elements are not distinct from the MRAM array itself. Consequently, Ezaki fails to anticipate the limitations of claim 13.

Ezaki does not disclose an MRAM device with circuitry configured to terminate an application of current along one or more of conductive lines before magnetization states of one or more magnetic elements selected for a write operation of the device are changed. Claim 19 recites in part: "[a] magnetic random access memory device, comprising ... circuitry configured to terminate an application of current along one or more of the conductive lines before magnetization states of one or more magnetic elements selected for a write operation of the device are changed." The Examiner cites paragraph [0023] of Ezaki as teaching the abovementioned limitations of claim 19. Such an interpretation of Ezaki's teachings, however, is traversed. Rather, Ezaki simply differentiates between open and closed (on and off) states of a write line in the passage. In particular, Ezaki defines an open or on state as a state in which the flowing current amount is equal to or greater than the threshold value. In addition, Ezaki defines a closed or off state as a state in which the flowing current is less than the threshold value. There is no teaching or suggestion of ceasing an application of current in either state, much less prior to changing magnetization states of one or more magnetic elements selected for a write operation. Consequently, Ezaki does not anticipate the limitations of claim 19.

Ezaki does not teach or suggest using the MRAM device described therein for determining a write pulse amplitude for a magnetic junction or for altering an applied bias voltage incrementally to detect unsatisfactory magnetic junctions. Claim 21 recites in part: "[a] method, comprising ... determining a write pulse amplitude for the magnetic junction based on a difference between a current level measured during the step of writing and a current level measured not during the step of writing." Claim 25 recites in part: "[a] method, comprising: applying an initial bias voltage on a magnetic element of a memory cell array, altering the bias voltage incrementally ... determining a difference in current levels between the initial bias voltage and an incremental bias voltage ... and classifying the magnetic element as unsatisfactory upon determining the difference is less than a predetermined level." Ezaki does not teach or suggest the MRAM device described therein including a means for monitoring current levels supplied from a power source during a write operation of a magnetic junction. Furthermore, Ezaki does not teach or suggest the MRAM device having a means for altering a bias voltage on a magnetic element, much less incrementally. As such, the statement on page 5 of the Office Action "... the apparatus discussed above would perform the method claims 21-27" is traversed.

Even if, for the sake of argument, Ezaki taught the aforementioned configurations, there is no teaching or suggestion within Ezaki of determining a write pulse amplitude for a magnetic junction based on a difference between a current level measured during the step of writing and a current level measured not

during the step of writing. In addition, there is no teaching or suggestion within Ezaki of classifying a magnetic element unsatisfactory based upon a difference in current levels between the initial bias voltage and one of the incremental bias voltages. Consequently, there is no teaching within Ezaki to perform the method claims of 21 and 25. A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. Of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987), MPEP 2131. Hence, Ezaki fails to anticipate the limitations of claims 21 and 25.

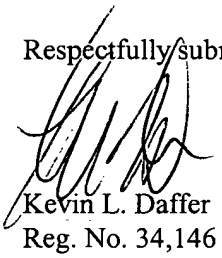
For at least the reasons stated above, Ezaki fails to anticipate the limitations of claims 1, 13, 19, 21, and 25. Therefore, claims 1, 13, 19, 21, and 25, as well as claims dependent therefrom, are patentably distinct over the cited art. Accordingly, removal of this rejection is respectfully requested.

CONCLUSION

This response constitutes a complete response to the issues raised in the Office Action mailed May 13, 2005. In view of the remarks herein traversing the rejections, Applicants assert that pending claims 1, 3, 4, and 7-27 are in condition for allowance. If the Examiner has any questions, comments, or suggestions, the undersigned attorney earnestly requests a telephone conference.

No fees are required for filing this amendment; however, the Commissioner is authorized to charge any additional fees, which may be required, or credit any overpayment, to Daffer McDaniel LLP Deposit Account No. 05-3268/5298-17100.

Respectfully submitted,



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